

Quiz - 4: Oceans, paleoclimate and biogeochemical cycles

William Gutowski

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Questions: 10

Finish**Save All****Help****1. Ocean temperature measurements** (Points: 10)

From the middle of the twentieth century to the end, the number of direct measurements of ocean temperature

- a. stayed the same.
- b. decreased.
- c. increased.

Save Answer**2. Sea-level change** (Points: 10)

Over roughly the last decade of the twentieth century, the largest contributor to rising sea level appears to have been

- a. melting of glaciers and ice caps (outside of Greenland and Antarctica).
- b. thermal expansion of sea water.
- c. melting of the Antarctic ice sheet.
- d. melting of the Greenland ice sheet.

Save Answer**3. Reconstructions of Northern Hemisphere temperature** (Points: 10)

Over the years 1000 - 1800, temperature reconstructions most commonly show Northern Hemisphere temperatures

- a. about 1 - 2 deg C warmer than the 1961-1990 average.
- b. decreasing at a rate of about 0.5 deg C per century.
- c. roughly 0.0 to -0.5 deg C cooler than the 1961-1990 average.
- d. becoming about 1 deg C warmer than present, then cooler than present.

Save Answer**4. Proxies for past temperature** (Points: 10)

Which of these are ways that we can know past temperatures?

- A. Changes in tree growth
- B. Changes in organism distributions

- C. Changes in isotope ratios
- D. Historical records

- 1. A, B, C, D
- 2. B, C
- 3. A, D
- 4. A, B, C

Save Answer

5. Carbon dioxide in the distant past (Points: 10)

Various sources indicate that 200 million years ago, atmospheric carbon dioxide levels were much lower than at present.

- True False

Save Answer

6. Greenhouse gas levels from ice cores (Points: 10)

Records of past greenhouse gas levels over the past 650,00 years from ice cores show that during interglacial periods (multiple correct responses)

- a. methane (CH₄) was as large as present.
- b. methane (CH₄) levels were higher than average.
- c. carbon dioxide (CO₂) nearly disappeared from the atmosphere.
- d. carbon dioxide (CO₂) levels were higher than average.

Save Answer

7. Carbon dioxide increases from fossil fuel burning (Points: 10)

Over the past 40 years, the measured annual increases in atmospheric carbon dioxide have been roughly _____ the amount of carbon dioxide put in the atmosphere by fossil fuel burning.

- a. half
- b. 1% of
- c. the same as
- d. three times

Save Answer

8. Methane lifetime (Points: 10)

Methane molecules injected into the atmosphere stay there on average a few centuries.

- True False

Save Answer

9. Ocean sources/sinks for CO₂ (Points: 10)

Prominent sinks for carbon dioxide from the atmosphere into the ocean are located (multiple correct responses)

- a. west of northern South America
- b. between North America and Europe
- c. east of Japan in the Pacific
- d. southeast of the Saudi Arabian peninsula
- e. south of Australia

Save Answer

10. Human-caused aerosols and climate (Points: 10)

Compared to pre-industrial times, anthropogenic (human-caused) increases in aerosols have by themselves caused a net decrease in the radiation at the top of the Northern Hemisphere atmosphere.

True False

Save Answer

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